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ABSTRACT

This pamphlet presents information on the effects of physical activity on the heart and practical guidelines for starting and staying on an exercise program. The following topics are discussed: (1) the benefits of getting sufficient exercise; (2) possible risks in exercising compared to benefits; (3) when to seek doctor's advice and prevention of heart attacks; (4) common myths about exercise; (5) which exercises condition the heart and lungs; (6) how to start, increase, and maintain an exercise program; and (7) ways to avoid injuries. Two sample exercise programs are outlined and advice is given on becoming more active throughout the day. (JD)

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Exercise And Your Heart

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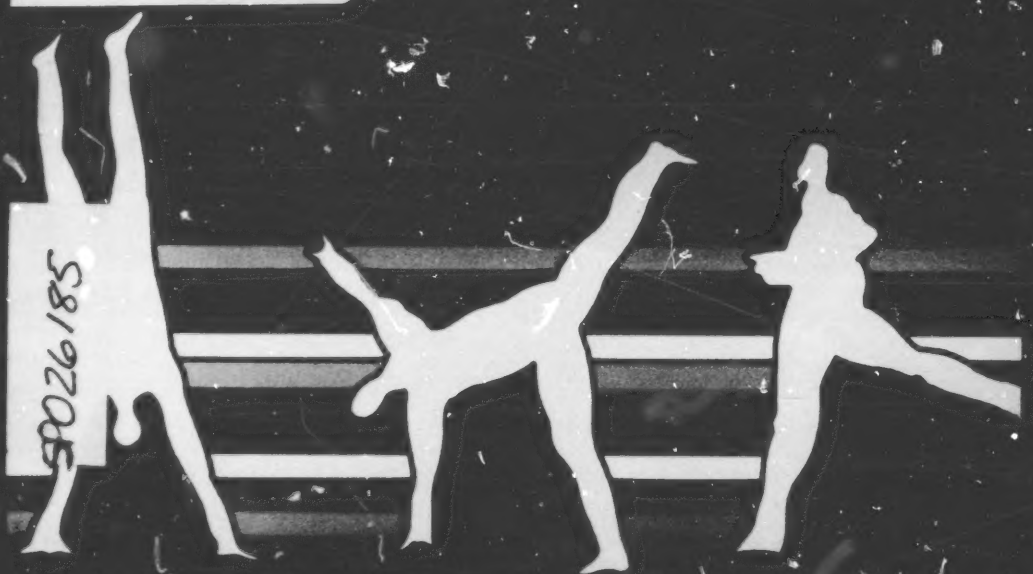

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How can this pamphlet help you?

'Regular, brisk exercise can help improve the way you look, feel and work. This pamphlet presents up to date information on the effects of physical activity on your heart and practical guidelines for starting and sticking on your own exercise programme. We hope this information will help you consider the ways exercise can help you enjoy life more fully.'

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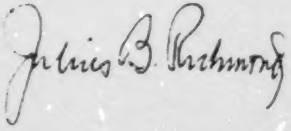
Foreword

For anyone concerned with the health of the American public, one of the most visible and encouraging trends in this country is the growing interest in physical fitness.

Regular and brisk exercise contributes to good health in many ways. It improves the efficiency of the heart and increases the amount of oxygen the body can process in a given amount of time. Those who exercise regularly often lose excess weight and improve muscle strength and stamina. Many also develop an improved self-image which can lead to further adoption of positive health behavior including that related to smoking and nutrition.

The booklet, *Exercise and Your Heart*, provides important and helpful information regarding our knowledge about the suggested relationship between exercise and a healthy heart. At the same time, it offers practical and helpful information, including examples of program guidelines that can safely be adopted in order to enhance the prospect for individual benefit.

In the 1979 report *Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention*, I applauded the growing interest in exercise but cautioned that there were still far too many Americans who have not been persuaded to engage in regular programs of physical activity. It is my hope and expectation that this booklet, prepared by the National Heart, Lung, and Blood Institute, will encourage many more people to become active in such a way as to make their lives more healthy and enjoyable.



Julius B. Richmond, M.D.
Assistant Secretary for Health and
Surgeon General

Coronary artery disease is the leading cause of death in the United States. It is responsible for 640,000 deaths each year, including almost one-third of all deaths in people between the ages of 35 and 64. On the average, almost three Americans will suffer a heart attack every minute of the day, adding up to approximately one and a half million each year. It is easy to see why this disease warrants absolute priority among those responsible for health policy and programs. Fortunately, during the past decade alone, there has been a 25 percent decline in coronary artery disease mortality.

Among the factors influencing this dramatic decline are the changes of lifestyle which relate to the risk factors associated with coronary artery disease. During the past several years, we have witnessed a decline in smoking among adult males and adult females, a decrease in cholesterol intake, improvements in the control of high blood pressure, and a growing interest and participation in physical activities. While existing data does not enable us to determine the exact role each is playing in the decline in the number of deaths caused by coronary artery disease, there is little doubt that these trends are very positive indeed.

Although, there are many important questions that we still need to answer regarding sedentary living and coronary artery disease, we do know enough to advise that regular exercise is a positive pursuit for anyone trying to keep his or her heart healthy.

This booklet tries to deal with the range of common questions and concerns about exercise and health. We have tried to address these in a prudent and practical manner so that an individual will have enough information to make an informed decision about exercise and a healthy heart.

Robert I. Levy, M.D.
Director
National Heart, Lung, and Blood Institute

Do we get enough exercise from our daily activities?

Most Americans get little vigorous exercise at work or during leisure hours. Today, only a few jobs such as lumberjacking require vigorous, physical activity. People usually ride in cars or buses rather than walk, use elevators instead of stairs, and sit at home during their free time rather than being physically active. Many people think they are getting enough exercise from golfing, bowling, or vacuuming the house. But these activities do not produce the benefits of regular, more vigorous exercise.

There are many ways to get exercise from activities like swimming, brisk walking, running, or jumping rope. These kinds of activities are sometimes called "aerobic"—meaning the body uses oxygen to produce the energy needed for the activity. Nowadays, many people are rediscovering the benefits of regular, vigorous exercise.

What are the benefits of exercise?

These are the benefits often experienced by people who exercise regularly.

Feeling Better

- gives you more energy
- helps in coping with stress
- improves your self-image
- increases resistance to fatigue
- helps counter anxiety and depression
- helps you to relax and feel less tense
- improves the ability to fall asleep quickly and sleep well
- provides an easy way to share an activity with friends or family and an opportunity to meet new friends

Looking Better

- tones your muscles
- burns off calories to help lose extra pounds or helps you stay at your ideal weight
- helps control the appetite

You need to burn off 3,500 calories more than you take in to lose 1 pound. If you want to lose weight, regular exercise can help you in either of two ways.

First, you can eat your usual amount of calories, but exercise more. For example: A 200-pound person who keeps on eating the same amount of calories, but decides to walk briskly each day for 1½ miles will lose about 14 pounds in 1 year. Or second, you can eat fewer calories and exercise more. This is an even better way to lose weight.

A person burns up only a minimal amount of calories with daily activities such as sitting. Any physical activity *in addition* to what you normally do will burn up extra calories.

Below are the average *calories spent per hour by a 150-lb person.* (A lighter person burns fewer calories; a heavier person burns more.) Since precise calorie figures are not available for most activities, the figures below are averaged from several sources and show the relative vigor of the activities.

Bicycling 6 mph	240 cals.
Bicycling 12 mph	410 cals.
Cross-country skiing per hour	700 cals.
Jogging 5½ mph	660 cals.
Jogging 7 mph	920 cals.
Jumping rope per hour	750 cals.
Running in place per hour	650 cals.
Running 10 mph	1,280 cals.
Swimming 25 yds/min. for an hr.	275 cals.
Swimming 50 yds/min. for an hr.	500 cals.
Tennis - singles per hour	400 cals.
Walking 2 mph	240 cals.
Walking 3 mph	320 cals.
Walking 4½ mph	440 cals.

The calories spent in a particular activity vary *in proportion* to one's body weight. For example, for a 100-lb person, reduce the calories by ⅓; for a 200-lb person, multiply by 1⅓.

Exercising *harder or faster* for a given activity will only slightly increase the calories spent. A better way to burn up calories is exercising *longer* and/or covering more *distance.*

Doing Better

- often contributes to more productivity at work
- increases your capacity for physical work
- builds stamina for other physical activities
- helps increase muscle strength
- helps your heart and lungs work more efficiently

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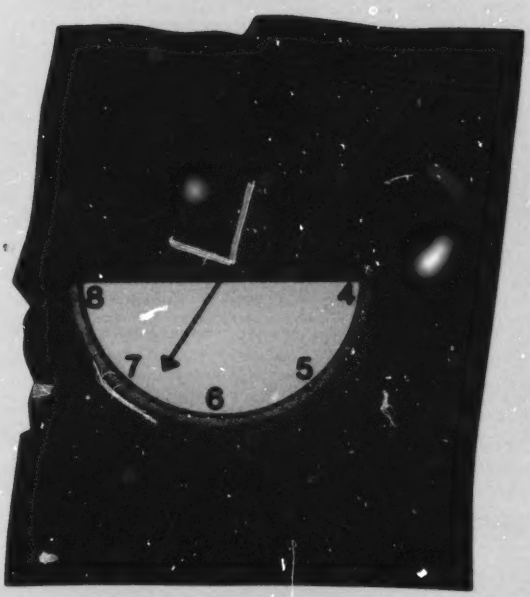
Consider the benefits of a well-conditioned heart:

In 1 minute with 45 to 50 beats, the heart of a well-conditioned person pumps the same amount of blood as the average person's heart pumps in 70 to 75 beats. Compared to the well-conditioned heart, the average heart pumps up to 36,000 *more* times per day, 13.1 million *more* times per year.

Feeling, looking, and doing better—all these benefits can help you enjoy your life more fully.



Can exercise reduce my chances of getting a heart attack?

Coronary artery disease is the major cause of heart disease and heart attack in America. It develops when fatty deposits build up on the inner walls of the blood vessels feeding the heart (coronary arteries). Eventually one of the major coronary arteries may become blocked—either by the buildup of deposits or by a blood clot forming in the artery's narrowed passageway. The result is a heart attack.

We now know that there are several factors that can increase your risk for developing coronary artery disease—and thus the chances for a heart attack. Fortunately, many of these risk factors can be reduced or eliminated.

The most important of these risk factors.

Cigarette Smoking, High Blood Pressure, High Blood Cholesterol

The higher their levels, the greater the risk. On the average, each one doubles your chances of getting a heart attack. Also the more risk factors you have, the greater your risk.

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Some other important risk factors.

Diabetes.—Having diabetes doubles the risk for coronary artery disease.

Overweight.—Excess weight increases the likelihood of getting high blood pressure, high blood cholesterol, and diabetes.

Low Levels of HDL.—Cholesterol in the blood is transported by different types of particles. One of these particles is a protein called high density lipoprotein or HDL. *Low* levels of HDL in the blood are related to an *increased* risk of coronary artery disease.

Physical Inactivity.—Being physically inactive also increases the risk of a heart attack. Most of the scientific research has found that compared to physically active people, inactive people have 1½ to 2 times the risk of having a heart attack. Chances of dying immediately after a heart attack is also 3 times greater in physically inactive people than in active people. Also, no research has shown an increased risk for physically active people.

Exercise can help reduce or eliminate some of these risk factors.

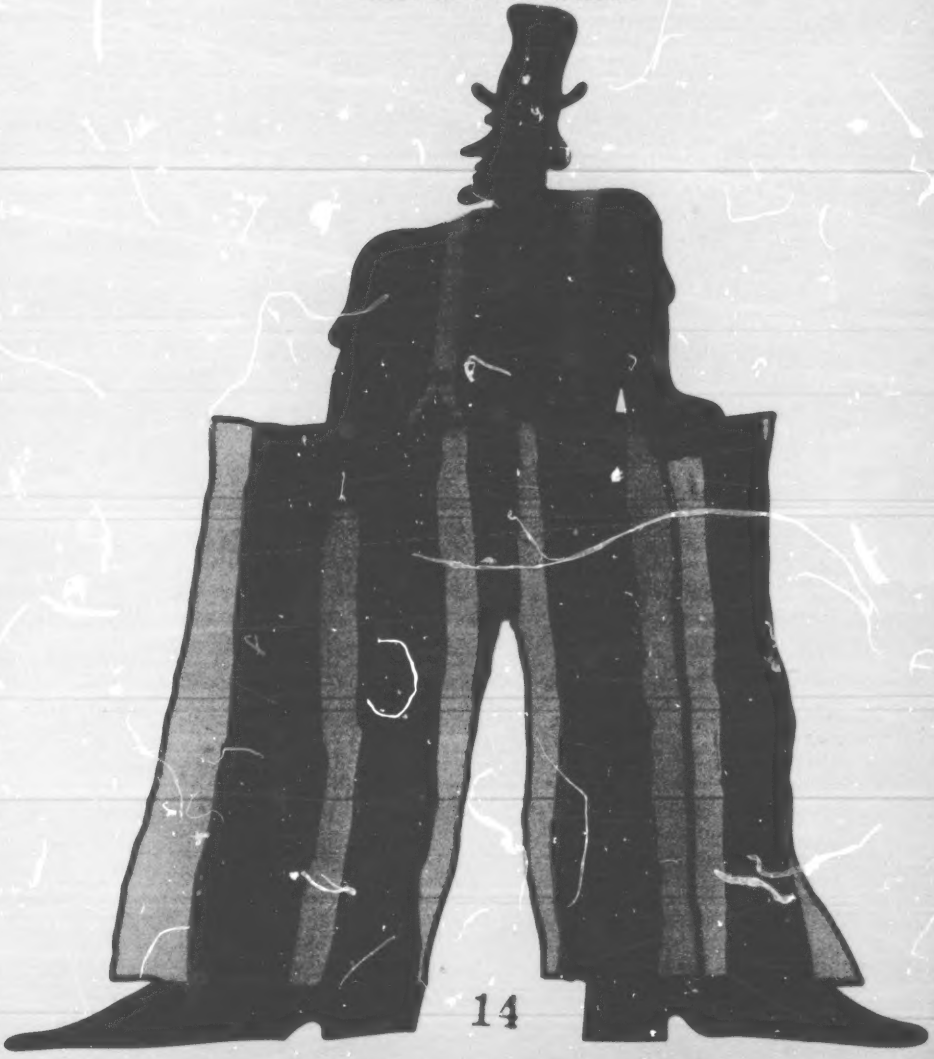
High Blood Pressure.—Regular exercise is associated with lower blood pressure.

Cigarette Smoking.—People who exercise vigorously and regularly are more likely to cut down or stop cigarette smoking.

Diabetes.—People at normal weight are much less likely to develop diabetes. Exercise also decreases a diabetic's insulin requirements.

Overweight.—Exercise can help individuals lose extra pounds or stay at ideal weight.

High Levels of HDL.– *High* levels of HDL (one of the cholesterol carrying proteins in the blood) have been linked to a *decreased* risk of coronary artery disease. Recent studies have shown that regular exercise significantly increases the levels of HDL.



In summary, current evidence suggests that a moderate amount of regular, brisk exercise may reduce your chances of having a heart attack. But remember that even if you exercise, you should not ignore other risk factors. It is important to reduce or eliminate any risk factors so that you can lower your chances of having a heart attack as much as possible.

For your heart health: exercise regularly; stop or cut down on your smoking; control high blood pressure with proper treatment; cut down on fats, cholesterol, and salt in your diet; and reduce if overweight.

Are there any risks in exercising?

Muscles and Joints

The most common risk in exercising is injury to the muscles and joints. This usually happens from exercising too hard or for too long—particularly if a person has been inactive for some time. However, most of these injuries can be prevented or easily treated as explained in "Effective Ways to Avoid Injuries" on page 34.

Heat Exhaustion and Heat Stroke

If precautions are not taken during warm, humid days, heat exhaustion or heat stroke can occur—although relatively rarely. The symptoms of heat exhaustion include a body temperature below normal, dizziness, headache, nausea, and sometimes confusion. The other and more serious occurrence is heat stroke. The symptoms are dizziness, headache, thirst, nausea, and muscle cramps. But there are two important symptoms that occur with heat stroke: (1) sweating stops and (2) body temperature may become dangerously high—which can be a serious problem.

Both heat exhaustion and heat stroke can be avoided by drinking enough liquids to replace those lost in exercising and by taking other important precautions listed on page 34 in the section on avoiding injuries.

Heart Problems

Occasionally, individuals have died while exercising. Most of these deaths are caused by overexertion in people who already had heart conditions. In individuals under age 30, these heart conditions are usually congenital heart defects (heart defects present at birth). In people over age 40, the heart condition is usually coronary artery disease (the buildup of deposits of fats in the heart's blood vessels). Many of these deaths have been preceded by warning signs such as chest pain, sudden dizziness, fainting, and extreme breathlessness. These are symptoms that should not be ignored and should be brought to the attention of a doctor.

Some of the deaths that occur during exercise are not caused by the physical effort itself. Death can occur at any time and during any kind of activity—eating, sleeping, sitting. This does not necessarily mean that a particular activity caused the death—only that the two events happened at the same time.

No research studies have shown that physically active people are more likely to have sudden, fatal heart attacks than inactive people. In fact, a number of studies have shown a reduced risk of sudden death for people who are physically active.

Exercising too hard is not beneficial for anyone, however, and is particularly strenuous for out-of-shape, middle-aged and older individuals. It is very important for these individuals to follow a gradual and sound exercise program.

If you consider the time your body may have been out of shape, it is only natural that it will take time to get it back into good condition. A gradual approach will help you maximize your benefits and minimize your risks.

Comparing the benefits and the risks

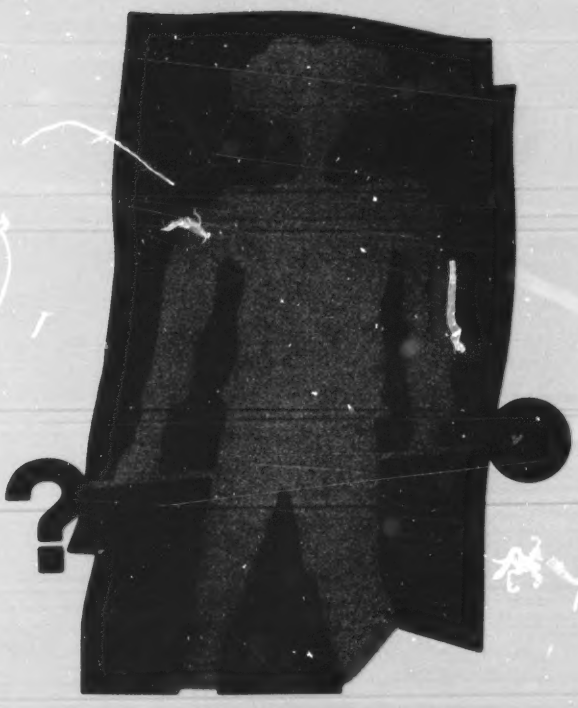
Should you begin a regular exercise program? Consider the ways exercise can benefit you and weigh them against the possible risks.

Potential Benefits

More energy and capacity for work and leisure activities
Greater resistance to stress, anxiety, and fatigue and a better outlook on life
Increased stamina and strength
Improved efficiency of the heart and lungs
Loss of extra pounds and help in staying at ideal weight
Reduced risk of heart attack

Potential Risks

Muscle/joint injuries
Heat exhaustion/heat stroke on hot days (rare)
Aggravation of existing or hidden heart problems



Should I consult a doctor before I start exercising?

Most people do not need to see a doctor before they start since a gradual, sensible exercise program will have minimal health risks. However, there are some people who should seek medical advice.

To find out if you should consult a doctor before you start, use the following check list.*

Mark those items that apply to you:

- ☐ Your doctor said you have heart trouble, a heart murmur, or you have had a heart attack.
- ☐ You frequently have pains or pressure—in the left or midchest area, left neck, shoulder, or arm— during or right after you exercise.
- ☐ You often feel faint or have spells of severe dizziness.
- ☐ You experience extreme breathlessness after mild exertion.
- ☐ Your doctor said your blood pressure was too high and is not under control. Or you don't know whether or not your blood pressure is normal.
- ☐ Your doctor said you have bone or joint problems such as arthritis.
- ☐ You are over age 60 and not accustomed to vigorous exercise.
- ☐ You have a family history of premature coronary artery disease.
- ☐ You have a medical condition not mentioned here which might need special attention in an exercise program. (For example, insulin-dependent diabetes.)

If you've checked one or more items, talk to your doctor before you start. If you've checked no items, you can start on a gradual, sensible exercise program tailored to your needs.

*This check list has been developed from several sources, particularly the *Physical Activity Readiness Questionnaire*, British Columbia Ministry of Health, Department of National Health and Welfare, Canada.

What if I've had a heart attack?

We do not know yet if regular, brisk exercise can reduce the risk of having another heart attack. However, regular exercise can improve the quality of your life—how you feel and look. It can help you do more than before without pain (angina) or shortness of breath.

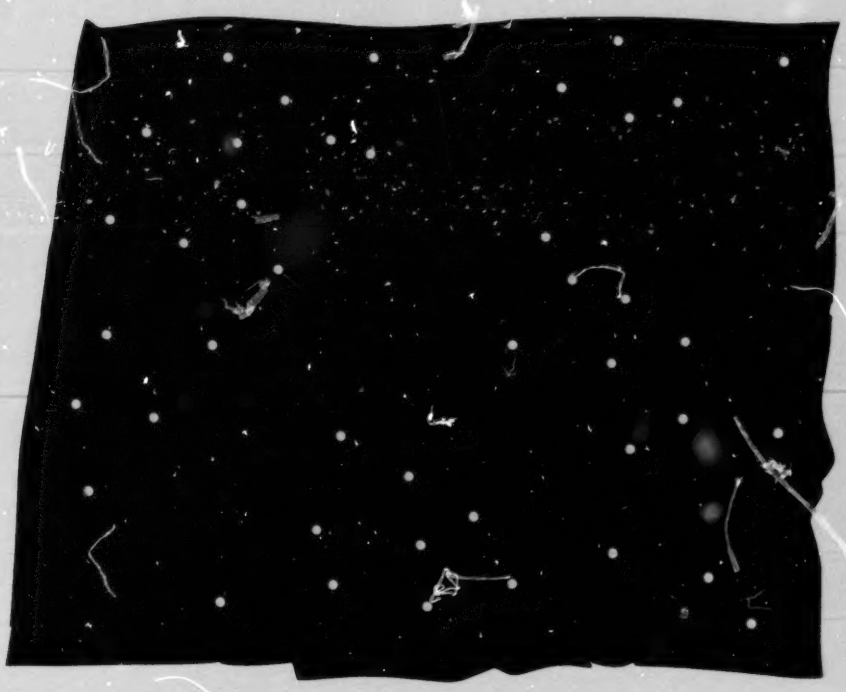
If you've had a heart attack, you should consult your doctor to be sure you are following a safe and effective exercise program. Your doctor's guidance is particularly important because it could help prevent heart pain and/or further damage from overexertion.

Five common myths about exercise

Myth 1. Exercising makes you tired.
As their bodies get more in shape, most people feel exercising gives them even more energy than before. Regular, brisk exercise can also help you resist fatigue and stress.

Myth 2. Exercising takes too much time.
Regular exercise does not have to take more than about 25 to 40 minutes, three times a week. Once you have established a comfortable exercise routine, exercising becomes a natural part of your life.

Myth 3. All exercises give you the same benefits.
All physical activities can give you enjoyment. But only regular, brisk, and sustained exercises such as brisk walking, jogging, or swimming improve the efficiency of your heart and lungs and burn off a lot of calories. Other activities do not give you these benefits, although they may give you other benefits such as increased flexibility or muscle strength.

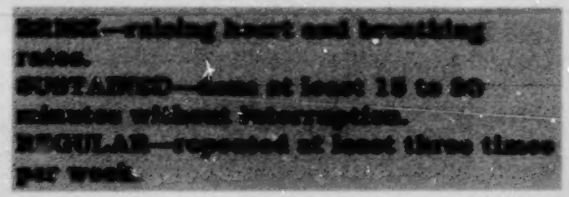


Myth 4. The older you are, the less exercise you need.
With age we tend to become less physically active, and therefore need to make sure we are getting enough exercise. In general, middle-aged and older people benefit from regular exercise just as young people do. Age need not be a limitation. What is important, no matter what your age, is tailoring the exercise program to your own fitness level.

Myth 5. You have to be athletic to exercise.
Most brisk activities do not require any special athletic abilities. In fact, many people who found school sports difficult have discovered that these other activities are easy to do and enjoyable.

Which exercises help condition my heart and lungs?

Exercises that improve the condition of your heart and lungs must have three key characteristics. These activities must be:



The columns below describe three types of activities and how they affect your heart.

Column A - These exercises are naturally very vigorous. They need to be done at least *15 minutes*, three times a week. Then they will condition your heart and lungs, burn off a lot of calories, and give you many other benefits mentioned in the beginning of this booklet.

Column B - These activities are moderately vigorous but can be excellent conditioners, if done briskly for at least *30 minutes*, three times a week. When done briskly, they give the same benefits as those activities in column A.

Column C - These activities by nature are not vigorous or sustained. They still have certain benefits—they can be enjoyable, help improve coordination and muscle tone, and help relieve tension. However, they neither condition the heart and lungs nor burn off many calories.

A Do Condition Heart & Lungs	B Can Condition	C Do Not Condition
Cross-Country Skiing	Bicycling	Baseball
Hiking *(uphill)*	Downhill Skiing	Bowling
Ice Hockey	Basketball	Football
Jogging	Calisthenics	Golf *(on foot or by cart)*
Jumping Rope	Field Hockey	Softball
Rowing	Handball	Volleyball
Running in Place	Racquetball	
Stationary Cycling	Soccer	
	Squash	
	Swimming	
	Tennis *(singles)*	
	Walking	

The key to success

How do I begin?

The key to a successful exercise program is choosing an activity (or activities) that you will *enjoy*. Here are some questions that can help you choose the right kind of exercise for you:

1. How physically fit are you?

If you've been inactive for a while, you may want to start with brisk walking or swimming rather than jogging or jumping rope. Beginning with less strenuous activities will allow you to become more fit without straining your body. Once you have gotten into better shape, you can change to a more vigorous activity if you wish.

2. How old are you?

If you are over 40 and have not been active, avoid particularly strenuous programs such as jogging when you are first starting out. For the first few months, build up the length and intensity of your exercise gradually. If you are over 60, walking and swimming are especially good forms of exercise.

3. What benefits do you want from exercising?

If you want the benefits of exercise that condition your heart and lungs, check the activities in columns A and B on page 21.

4. Do you like to exercise alone or with other people?

Do you like individual activities such as swimming, team sports such as soccer, or two-person activities such as racquetball? Companionship can help you get started and keep going. If you would like to exercise with someone else, can you find a partner easily and quickly? If not, consider choosing another activity—at least until you can find a partner.

5. Do you prefer to exercise outdoors or in your home?
Outdoor exercise offers variety in scenery and weather. Indoor activities offer shelter from the weather and can offer the convenience of exercising at home as with stationary cycling. Some activities such as running in place or jumping rope can be done indoors or outdoors. If your activity can be seriously affected by the weather, consider choosing an alternate activity, too. Then you can switch activities and still stay on your regular schedule.

6. How much money are you willing to spend for sports equipment or facilities?
Many activities require little or no equipment. For example, brisk walking only requires a comfortable pair of walking shoes. Also, many communities offer free or inexpensive recreation facilities and physical activity classes.

7. When can you best fit the activity into your schedule?
Do you feel more like exercising in the morning, afternoon, or evening? Consider moving other activities around. Schedule your exercise as a regular part of your activities. Remember that exercise sessions are spread out over the week and needn't take more than about 25 to 40 minutes at a time.

By choosing activities you like, you will be much more likely to exercise regularly, keep on exercising, and enjoy its many benefits.

How do I pace myself?

Build up slowly. If you've been inactive for a long while, remember it will take time to get into shape. But no matter where you begin, you will be able to build up your exercise time or pace as your body becomes more fit. Just remember that you will feel more fit after a few weeks than when you first started.

How hard should I exercise?

You can find out how hard to exercise by keeping track of your heart rate. Your maximum heart rate is the fastest your heart can beat. Exercise above 75 percent of the maximum heart rate may be too strenuous unless you are in excellent physical condition. Exercise below 60 percent gives your heart and lungs little conditioning.

Therefore, the best activity level is 60 to 75 percent of this maximum rate. This 60-75 percent range is called your target zone.

When you begin your exercise program, aim for the lower part of your target zone (60 percent) during the first few months. As you get into better shape, gradually build up to the higher part of your target zone (75 percent). After 6 months or more of regular exercise, you can exercise at up to 85 percent of your maximum heart rate—if you wish. However, you do *not* have to exercise that hard to stay in good condition.

To find your target zone, look for the age category closest to your age and read the line across. For example, if you are 30, your target zone is 114 to 142 beats per minute. If you are 43, the closest age on the chart is 45; the target zone is 105 to 131 beats per minute.

Age	Target Zone 60-75%	Average Maximum Heart Rate 100%
20 years	120-150 beats per min.	200
25 years	117-146 beats per min.	195
30 years	114-142 beats per min.	190
35 years	111-138 beats per min.	185
40 years	108-135 beats per min.	180
45 years	105-131 beats per min.	175
50 years	102-127 beats per min.	170
55 years	99-123 beats per min.	165
60 years	96-120 beats per min.	160
65 years	93-116 beats per min.	155
70 years	90-113 beats per min.	150

Your maximum heart rate is usually 220 minus your age. However, the above figures are averages and should be used as general guidelines.

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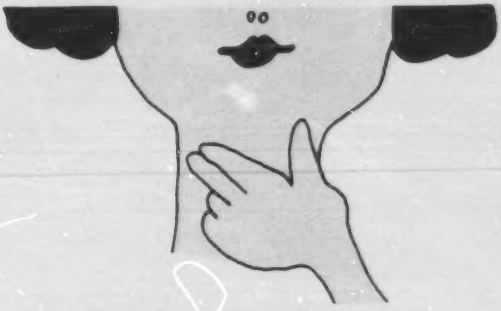
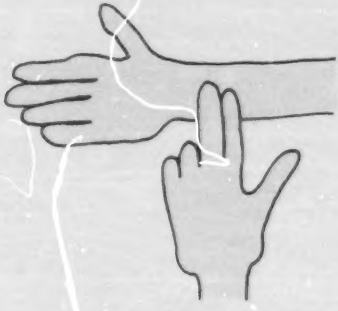
Note: A few high blood pressure medicines lower the maximum heart rate and thus the target zone rate. If you are taking high blood pressure medications, call your physician to find out if your exercise program needs to be adjusted.

To see if you are within your target zone, take your pulse immediately after you stop exercising.

1. When you stop exercising, quickly place the tip of your third finger lightly over one of the blood vessels on your neck (carotid arteries) located to the left or right of your Adam's apple.



Another convenient pulse spot is the inside of your wrist just below the base of your thumb.



2. Count your pulse for 30 seconds and multiply by two.

3. If your pulse is below your target zone, exercise a little harder the next time. If you're above your target zone, exercise a little easier. And if it falls within the target zone, you're doing fine.

4. Once you're exercising within your target zone, you should check your pulse at least once each week during the first 3 months and periodically thereafter.

A special tip:

It is important to exercise at a comfortable pace. For example, when jogging or walking briskly you should be able to keep up a conversation comfortably. If you do not feel normal again within 10 minutes of stopping exercise, you are pushing yourself too much.

Also, if you have difficulty breathing, experience faintness or prolonged weakness during or after exercising, you are exercising too hard. Simply cut back and check your pulse to see if you are still within you target zone.

How long should I exercise?

Each exercise session should last from about 25 to 40 minutes and include:

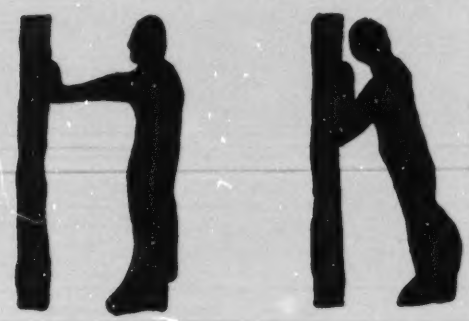
5 min.	Warm up
15-30 min.	Exercising in your target zone (15 to 30 minutes is your goal—begin with a shorter period and build up gradually)
5 min.	Cool down
25-40 min.	Total

Warm up—5 minutes

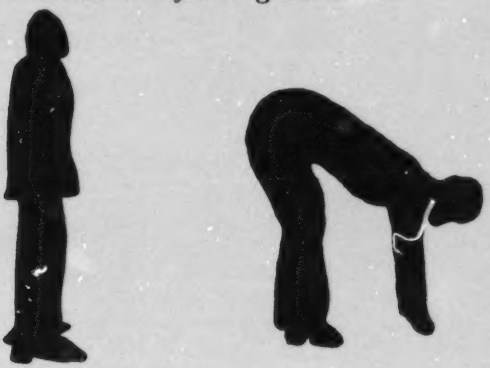
Begin exercising slowly to give your body a chance to limber up and get ready for more vigorous exercise. Start at a medium pace and gradually increase it by the end of the 5-minute warm-up period.

Note: With especially vigorous activities such as jumping rope, jogging, or stationary cycling, begin your warm-up period with gentle stretching exercises. Then begin jumping rope or jogging slowly, warming up to your target zone. Many of these stretching exercises can be found in books on sports medicine and running. Below are three exercises you can use in your warm-up period. Each of these exercises help stretch different parts of your body. Do stretching exercises slowly and in a steady, rhythmical way.

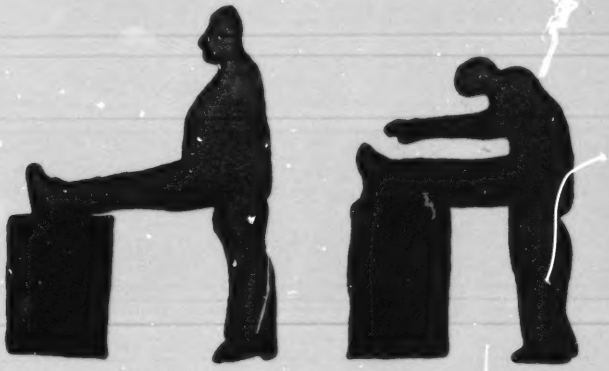
Wall push: Stand about 1½ feet away from the wall. Then lean forward pushing against the wall, keeping heels flat. Count to 10 then rest. Repeat one to two times.



Palm touch: Stand with your knees slightly bent. Then bend from the waist and try to touch your palms to the floor. Do not bounce. Count to 10 then rest. Repeat one to two times. If you have lower back problems, do this exercise with your legs crossed.



Toe touch: Place your right leg level on a stair, chair, or other object. Keeping your other leg straight, lean forward and slowly try to touch your right toe—with right hand 10 times, with left hand 10 times. Do not bounce. Then switch legs and repeat with each hand. Repeat entire exercise one to two times.



Exercising within your target zone—15-30 minutes

Your *goal* is a minimum of 15-30 minutes. Build up your exercising time gradually over the weeks ahead until you reach your goal of 15-30 minutes. Once you get in shape, your exercising will last from 15-30 minutes depending on the type of exercise you are doing and how briskly you do it. For example—for a given amount of time, jogging requires more energy than a brisk walk. Jogging will thus take less time than walking to achieve the same conditioning effect. Generally, the guidelines are: the very brisk exercises of column A on page 21 should be done a minimum of 15 minutes. The mildly brisk exercises of column B should be done a minimum of 30 minutes. For two examples of how to build up to the goal of 15 to 30 minutes, see "Two Sample Exercise Programs" on page 37.

Cool down—5 minutes

After exercising within your target zone, slow down gradually. For example, swim more slowly or change to a more leisurely stroke. You can also cool down by changing to a less vigorous exercise, such as changing from jumping rope to walking. This allows your body to relax gradually. Abrupt stopping can cause dizziness. If you have been running, walking briskly, or jumping rope, repeat your stretching and limbering exercises to loosen up your muscles.

How often should I exercise?

Exercise at least three times per week.

Exercising *regularly* is one of the most important aspects of your exercise program. If you don't exercise at least three times a week, you won't experience as many of the benefits of regular, vigorous physical activity as you could or make as much progress. Try to spread your exercise sessions throughout the week to maximize the benefits.

What if I miss a few sessions?

Whenever you miss a few sessions (more than a week), you will need to resume exercising at a lower level than before.

If you miss a few sessions because of a temporary, minor illness such as a cold, wait until you feel normal before you resume exercising. If you have a minor injury, wait until the pain disappears. When you resume exercising, start at one-half to two-thirds your normal level, depending on the number of days you missed and how you feel while exercising.

Whatever the reasons for missing sessions, don't worry about the missed days. Just get back into your routine and think about the progress you will be making toward your exercise goal.

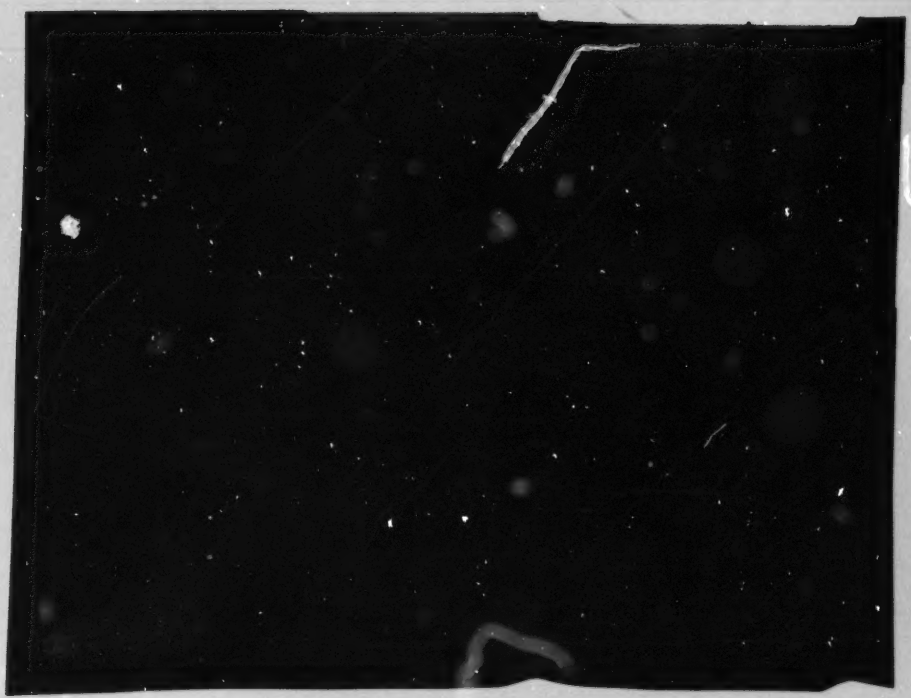
Is there a top limit to exercising?

That depends on the benefits you are seeking.

Anything beyond 30 minutes daily of a very vigorous activity—such as those listed in column A on page 21 or 60 minutes daily of a moderately vigorous activity—such as those in column B will result in little added conditioning of your heart and lungs.

If you want to lose extra pounds or control your present weight, there is no upper limit in that the longer you exercise, the more calories you burn off. But remember that the most effective weight loss program includes cutting down on calories in addition to exercise.

Remember: *How* you exercise is just as important as the kind of activity you do. Your activity should be brisk, sustained, and regular—but you can do it in gradual steps. Common sense and your body will tell you when you are exercising too long or too hard. Don't push yourself to the point where exercise stops being enjoyable.



Effective ways to avoid injuries

The most powerful medicine for injuries is prevention. Here are some effective ways to avoid injuries:

1. Build up your level of activity *gradually* over the weeks to come.

- Try not to set your goals too high—otherwise you will be tempted to push yourself too far too quickly.
- For activities such as jogging, walking briskly, and jumping rope, limber up gently and slowly before and after exercising.
- For other activities, build up slowly to your target zone, and cool down slowly afterwards.

2. Listen to your body for early warning pains.

- Exercising too much can cause injuries to joints, feet, ankles, and legs. So don't make the mistake of exercising beyond early warning pains in these areas or more serious injuries may result. Fortunately, minor muscle and joint injuries can be readily treated by rest and aspirin.

3. Be aware of possible signs of heart problems such as:

- Pain or pressure in the left or midchest area, left neck, shoulder, or arm during or just after exercising. (Vigorous exercise may cause a side stitch while exercising—a pain below your bottom ribs—which is not the result of a heart problem.)
- Sudden dizziness, cold sweat, pallor, or fainting.

Ignoring these signals and continuing to exercise may lead to serious heart problems. Should any of these signs occur, stop exercising and call your doctor.

4. For outdoor activities, take appropriate precautions under special weather conditions.

On hot, humid days:

- Exercise during cooler parts of the day such as early morning or early evening after the sun has gone down.
- Exercise less than normal for a week until you become adapted to the heat.
- Drink lots of fluids, particularly water. You do not need extra salt because you get enough salt in your diet. Also, a well-conditioned body learns to conserve salt so that most of the sweat is water.
- Watch out for signs of heat stroke—feeling dizzy, weak, light headed, and/or excessively tired; sweating stops; or body temperature becomes dangerously high.
- Wear a minimum of light, loose-fitting clothing.
- Avoid rubberized or plastic suits, sweatshirts, and sweat pants. Such clothing will not actually help you lose weight any faster by making you sweat more. The weight you lose in fluids by sweating will be quickly replaced as soon as you begin drinking fluids again. This type of clothing can also cause dangerously high temperatures, possibly resulting in heat stroke.

On cold days:

- Wear one layer less of clothing than you would wear if you were outside but not exercising. It's also better to wear several layers of clothing rather than one heavy layer.
- Use old mittens, gloves, or cotton socks to protect your hands.
- Wear a hat, since up to 40 percent of your body's heat is lost through your neck and head.

On rainy, icy, or snowy days:

- Be aware of reduced visibility (for yourself and for drivers) and reduced traction on pathways.

5. Other handy tips are:

- If you've eaten a meal, avoid strenuous exercise for at least 2 hours. If you exercise vigorously first, wait about 20 minutes before eating.
- Use proper equipment such as goggles to protect your eyes for handball or racquetball, or good running shoes with adequate cushioning in the soles.
- Hard or uneven surfaces such as cement or rough fields are more likely to cause injuries. Soft, even surfaces such as a level grass field, a dirt path, or a track for running are better for your feet and joints.
- If you run or jog, land on your heels rather than the balls of your feet. This will minimize the strain on your feet and lower legs.
- Joggers or walkers should also watch for cars and wear light-colored clothes or a reflecting band during darkness so that drivers can see you. Face oncoming traffic and do not assume that drivers will notice you on the roadway.
- If you bicycle, you can help prevent injuries by wearing a helmet and using a light and reflectors on the wheels at night. Also, ride in the direction of traffic and try to avoid busy streets.

Two sample exercise programs

There are many ways to begin an exercise program. Below are two examples –a walking and a jogging program. These activities are easy ways for most people to get regular exercise because they do not require special facilities or equipment other than good, comfortable shoes. If walking or jogging does not meet your needs, look for other exercise programs in pamphlets and books on aerobic exercise and sports medicine.

If you find a particular week's pattern tiring, repeat it before going on to the next pattern. You do not have to complete the walking program in 12 weeks or the jogging program in 15 weeks.

A sample walking program

	Warm up	*Target zone exercising*	*Cool down*	*Total time*
Week 1				
Session A	Walk slowly 5 min.	Then walk briskly 5 min.	Then walk slowly 5 min.	15 min.
Session B	Repeat above pattern.			
Session C	Repeat above pattern.			
Continue with at least three exercise sessions during each week of the program.				
Week 2	Walk slowly 5 min.	Walk briskly 7 min.	Walk slowly 5 min.	17 min.
Week 3	Walk slowly 5 min.	Walk briskly 9 min.	Walk slowly 5 min.	19 min.
Week 4	Walk slowly 5 min.	Walk briskly 11 min.	Walk slowly 5 min.	21 min.
Week 5	Walk slowly 5 min.	Walk briskly 13 min.	Walk slowly 5 min.	23 min.
Week 6	Walk slowly 5 min.	Walk briskly 15 min.	Walk slowly 5 min.	25 min.

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Week 7	Walk slowly 5 min.	Walk briskly 18 min.	Walk slowly 5 min.	28 min.
Week 8	Walk slowly 5 min.	Walk briskly 20 min.	Walk slowly 5 min.	30 min.
Week 9	Walk slowly 5 min.	Walk briskly 23 min.	Walk slowly 5 min.	33 min.
Week 10	Walk slowly 5 min.	Walk briskly 26 min.	Walk slowly 5 min.	36 min.
Week 11	Walk slowly 5 min.	Walk briskly 28 min.	Walk slowly 5 min.	38 min.
Week 12	Walk slowly 5 min.	Walk briskly 30 min.	Walk slowly 5 min.	40 min.

Week 13 on:
Check your pulse periodically to see if you are exercising within your target zone. As you get more in shape, try exercising within the upper range of your heart zone. Remember that your goal is to continue getting the benefits you are seeking and enjoying your activity.

A Sample Jogging Program

If you are over 40 and have not been active, you should not begin with a program as strenuous as jogging. Begin with the walking program instead. After completing the walking program, you can start with week 3 of the jogging program below.

	Warm up	*Target zone exercising*	*Cool down*	*Total time*
Week 1				
Session A	Stretch and limber up for 5 min.	Then walk 10 min. Try not to stop.	Then walk slowly 3 min. and stretch 2 min.	20 min.
Session B	Repeat above pattern.			
Session C	Repeat above pattern.			
Continue with at least three exercise sessions during each week of the program.				
Week 2	Stretch and limber 5 min.	Walk 5 min., jog 1 min., walk 5 min., jog 1 min.	Walk slowly 3 min., stretch 2 min.	22 min.
Week 3	Stretch and limber 5 min.	Walk 5 min., jog 3 min., walk 5 min., jog 3 min.	Walk slowly 3 min., stretch 2 min.	26 min.
Week 4	Stretch and limber 5 min.	Walk 4 min., jog 5 min., walk 4 min., jog 5 min.	Walk slowly 3 min., stretch 2 min.	28 min.
Week 5	Stretch and limber 5 min.	Walk 4 min., jog 5 min., walk 4 min., jog 5 min.	Walk slowly 3 min., stretch 2 min.	28 min.
Week 6	Stretch and limber 5 min.	Walk 4 min., jog 6 min., walk 4 min., jog 6 min.	Walk slowly 3 min., stretch 2 min.	30 min.
Week 7	Stretch and limber 5 min.	Walk 4 min., jog 7 min., walk 4 min., jog 7 min.	Walk slowly 3 min., stretch 2 min.	32 min.

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Week 8	Stretch and limber 5 min.	Walk 4 min., jog 8 min., walk 4 min., jog 8 min.	Walk slowly 3 min., stretch 2 min.	34 min.
Week 9	Stretch and limber 5 min.	Walk 4 min., jog 9 min., walk 4 min., jog 9 min.	Walk slowly 3 min., stretch 2 min.	36 min.
Week 10	Stretch and limber 5 min.	Walk 4 min., jog 13 min.	Walk slowly 3 min., stretch 2 min.	27 min.
Week 11	Stretch and limber 5 min.	Walk 4 min., jog 15 min.	Walk slowly 3 min., stretch 2 min.	29 min.
Week 12	Stretch and limber 5 min.	Walk 4 min., jog 17 min.	Walk slowly 3 min., stretch 2 min.	31 min.
Week 13	Stretch and limber 5 min.	Walk 2 min. jog slowly 2 min., jog 17 min.	Walk slowly 3 min., stretch 2 min.	31 min.
Week 14	Stretch and limber 5 min.	Walk 1 min., jog slowly 3 min., jog 17 min.	Walk slowly 3 min., stretch 2 min.	31 min.
Week 15	Stretch and limber 5 min.	Jog slowly 3 min., jog 17 min.	Walk slowly 3 min., stretch 2 min.	30 min.

Week 16 on:
Check your pulse periodically to see if you are exercising within your target zone. As you become more fit, try exercising within the upper range of your target zone. Remember that your goal is to continue getting the benefits you are seeking and enjoying your activity.

The exercise patterns for both of the sample exercise programs are suggested guidelines. Listen to your body and build up less quickly, if needed.

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How do I keep going?

Here are some tips to help you keep on your exercise program:

Set your sights on short-term as well as long-term goals. For example, if your long-term goal is to walk 1 mile, then your short-term goal can be to walk the first quarter mile. Or if your long-term goal is to lose 10 pounds, then focus on the immediate goal of losing the first 2 or 3 pounds. With short-term goals you will be less likely to push yourself too hard or too long. Also, think back to where you started. When you compare it to where you are now, you will see the progress you've made.

Discuss your exercise program and goals with your family or friends. Their encouragement and understanding are important sources of support that can help you keep going. Your friends and family might even join in.

If you're having trouble sticking to your regular exercise program, use the check list on pages 22 and 23 to think through the kinds of things that can affect your exercise enjoyment.

What were your original reasons for starting an exercise program? Do these reasons still apply or are others more important? If you are feeling bored or aren't enjoying a particular activity, consider another conditioning exercise.

By continuing to exercise regularly, you'll be building a good health habit with benefits you can enjoy throughout your life.

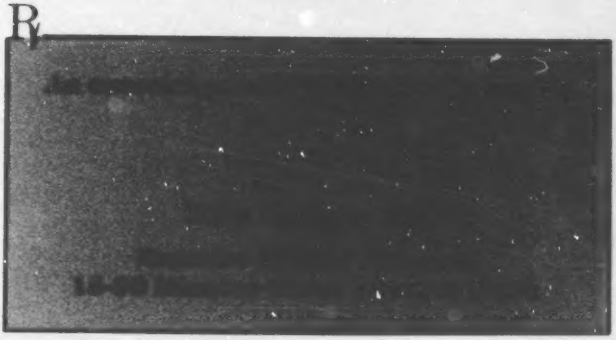
How can I become more active throughout my day?

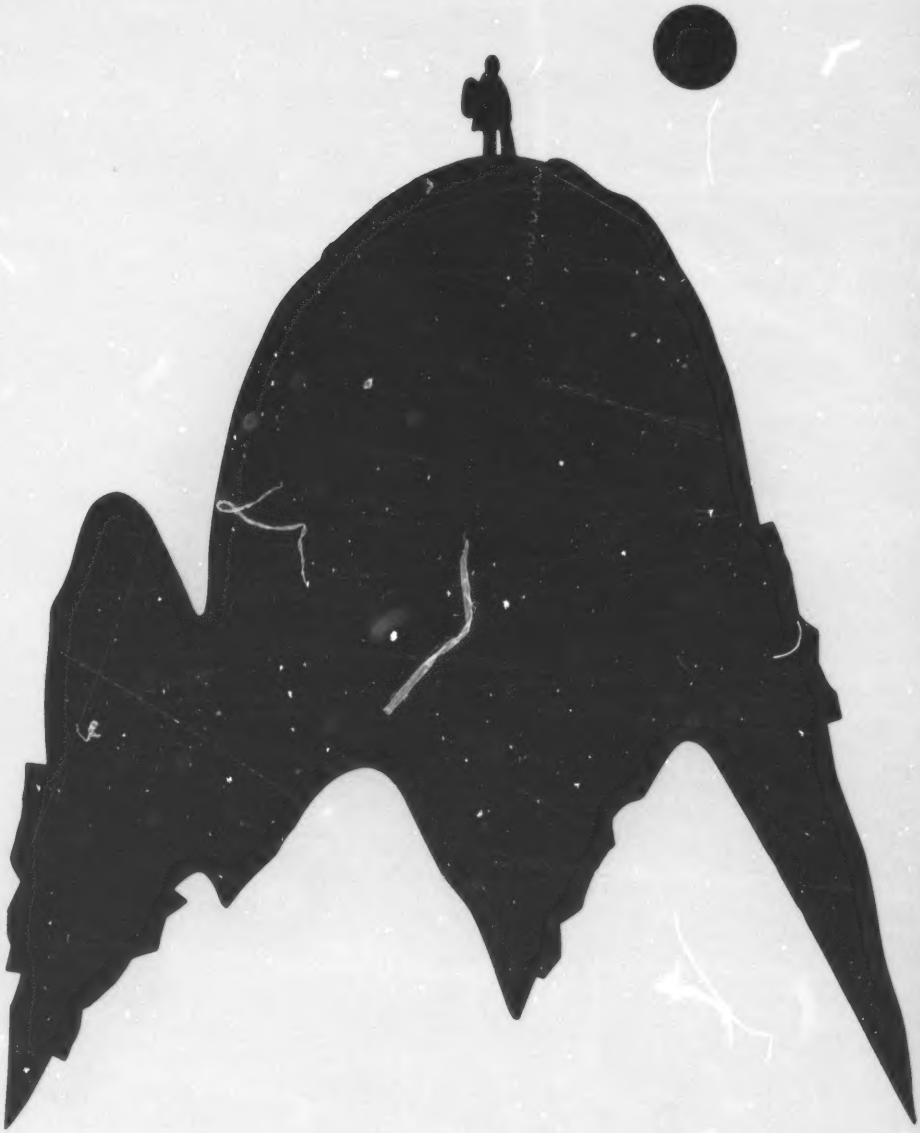
To become more physically active throughout your day, take advantage of any opportunity to get up and move around. Here are some examples:

- Use the stairs—up and down—instead of the elevator. Start with one flight of stairs and gradually build up to more.
- Park a few blocks from the office or store and walk the rest of the way. Or if you ride on public transportation, get off a stop or two before and walk a few blocks.
- Take an exercise break—get up and stretch, walk around and give your muscles and mind a chance to relax.
- Instead of eating that extra snack take a brisk stroll around the neighborhood.

If you have a family, encourage them to take part in an exercise program and recreational activities they can either share with you or do on their own. It is best to build healthy habits when children are young. When parents are active, children are more likely to be active and stay active after they become adults.

Whatever your age
moderate physical activity
can become a good health habit
with lifelong benefits.





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